# CLAIMS

What is claimed is:

1. A method of achieving mutual transmitter frequency lock in a full duplex link consisting of a first receiver and transmitter, and a second receiver and transmitter, the first receiver and second transmitter operating on one frequency, and the first transmitter and second receiver operating on a second frequency, comprising:

receiving the signal from the second transmitter at the first receiver,

deriving a first frequency correction signal from the first receiver,

shifting the frequency of the first transmitter using the first correction signal,

receiving the signal from the first transmitter at the second receiver,

deriving a second frequency correction signal from the second receiver, and

shifting the frequency of the second transmitter using the second correction signal.

2. The method of Claim 1 where the method of deriving a frequency correction signal comprises:

deriving an offset from a baseband demodulator, the offset corresponding to the difference between the frequency of the signal received and the center frequency of the receiver, and

filtering the offset from the baseband demodulator.

3. The method of Claim 1 where the method of deriving a frequency correction signal comprises:

downconverting the received signal to an intermediate frequency signal,

comparing the intermediate frequency signal to a reference signal producing a digital comparison signal, and

integrating the digital comparison signal.

4. The method of Claim 1 where the first and second frequencies are in the 60 GHz region.

13. The communications node of Claim 12 where the baseband demodulator is a frequency discriminator.

14. The communications node of Claim 11 where the receiver offset signal is derived from the intermediate frequency signal using a frequency comparator driven by a reference.

15. A full duplex communications link comprising:

first receiver means for receiving a first signal at a first predetermined frequency, the receiver means having a signal input, data output, and an offset signal output representing the frequency difference between the first predetermined frequency and the frequency of the first signal,

first transmitter means for transmitting a second signal at a second predetermined frequency, the transmitter means having a data input, frequency tuning input, and a signal output,

first control means taking the offset signal from the first receiver and producing the frequency tuning input for the first transmitter, signaling the offset in the first signal to the second receiver,

second receiver means for receiving the second signal at the second predetermined frequency, the receiver means having a signal input, data output, and an offset signal output representing the frequency difference between the first predetermined frequency and the frequency of the second signal,

second transmitter means for transmitting the first signal at the first predetermined frequency, the transmitter means having a data input, frequency tuning input, and a signal output, and

second control means for taking the offset signal from the second receiver and producing the frequency tuning input for the second transmitter, thereby responding to the offset sensed by the first receiver, and correcting the frequency of the second transmitter accordingly.

16. The communications link of Claim 15 where both transmitters and receivers operate in the 60 GHz region.

17. The communications link of Claim 15 where the receiver means further comprises downconverter means for downconverting the signal input to an intermediate frequency from which the data output and offset signal output are derived.

18. The communications link of Claim 17 where the offset signal is derived from the intermediate frequency signal using a baseband demodulator.

19. The communications link of Claim 18 where the baseband demodulator is a frequency discriminator.

20. The communications link of Claim 19 where the baseband demodulator is a delay line discriminator.

21. The communications link of Claim 17 where the offset signal is derived from the intermediate frequency signal using a frequency comparator driven by a reference.

22. The communications link of Claim 15 where the signals between receivers and transmitters are propagated via antennas.

23. The communications link of Claim 15 where the signals between receivers and transmitters are propagated by wire.

24. The communications link of Claim 15 where the signals between receivers and transmitters are propagated by optical fiber.

5. The method of Claim 1 where the signals between receivers and transmitters are propagated via antennas.

6. The method of Claim 1 where the signals between receivers and transmitters are propagated by wire.

7. The method of Claim 1 where the signals between receivers and transmitters are propagated by optical fiber.

8. A communications node for communicating with another node comprising:

receiver means for receiving a first signal at a first predetermined frequency, the receiver means having a signal input, data output, and an offset signal output representing the frequency difference between the first predetermined frequency and the carrier frequency of the first signal,

transmitter means for transmitting a second signal at a second predetermined frequency, the transmitter means having a data input, carrier frequency tuning input, and a signal output, and

control means taking the offset signal from the receiver and producing the carrier frequency tuning input for the transmitter, thereby signaling the frequency offset in the first signal to the other node.

9. The communications node of Claim 8 where the receiver and transmitter operate in the 60 GHz region.

10. The communications node of Claim 8 where the receiver and transmitter operate in different frequency bands.

11. The communications node of Claim 8 where the receiver means includes means for downconverting the first signal to an intermediate frequency signal.

12. The communications node of Claim 11 where the receiver offset signal is derived from the intermediate frequency signal by a baseband demodulator.